

Final Report

Scituate School Department Technology Assessment

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Leveling the Field for All Learners

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The Project

Highlander Institute believes that blended learning implementation relies upon strong infrastructure and access. In order to empower teachers who are taking risks and stepping out of their comfort zones, it is essential that they can depend upon strong bandwidth, quality devices, and adequate supports. Our policy and infrastructure audits help district leadership feel confident that they are providing building and classroom leaders with the supports they need to be successful in a blended model.

The following report explores the current performance level of Scituate infrastructure across four key competencies. These competencies, and the type of audit / survey that we administered in order to collect information, are presented in the table below.

Competencies	Services
Ensure reliable and accessible internet	Network Audit to determine alignment with current and future WIFI needs
Offer adequate accessibility to devices	Device Audit to determine alignment with current and future vision- including comprehensive evaluation of existing device infrastructure, with internal (staff/student) and external (community) evidence
Enable responsive & effective tech support	Tech Support Audit to determine alignment with best practices
Understand district readiness	Readiness Survey for district admins / school leaders / teachers to articulate current strengths and needs

Key Terms/Acronyms

- Bandwidth - describes the maximum data transfer rate of a network or Internet connection. It measures how much data can be sent over a specific connection in a given amount of time.
- Transmission Control Protocol (TCP) - a set of communications protocols used for the exchange of information over networks and especially over the Internet
- Megabits per second/Gigabits (Mbps/Gbps) - Mbps/Gbps is used to measure data transfer speeds of high bandwidth connections.
- Bring your own device (BYOD) - the practice of allowing the students (and teachers) to use their own computers, smartphones, or other devices for educational purposes.

District-Wide Survey Statistics

As a part of our Technology Assessment, we administered a district-wide survey for teachers, students, parents and administrators between April 24 and May 7, 2017. We received 1,000+ responses and were able to draw some conclusions across ecosystem elements for consideration. Full copies of the survey results can be found in Appendix A.

of Respondents and % of Population

	Parent	Student	%	Teacher	%	Admin	%
Clayville Elementary	55	42	29.5%	11	78.5%	1	100%
North Scituate Elementary	64	69	32.7%	17	94.4%	1	100%
Hope Elementary	52	90	43%	16	80%	1	100%
Scituate Middle School	96	299	87.7%	16	45.7%	1	100%
Scituate High School	101	158	34.1%	42	93.3%	1	100%
TOTAL	347	658	45.7%	102	78.4%	5	100%

Competency #1

Ensure reliable and accessible internet

Internet Bandwidth

Internet bandwidth is the **most vital component of a successful blended learning** environment. Within Scituate classrooms, most resources and assessment systems leverage cloud-based solutions, which require reliable high-speed broadband access. Teachers require the capacity to stream HD media across multiple devices as well as the ability to complete a simple webform.

According to the Broadband Imperative Report¹ prepared by the State Educational Technology Directors Association (SETDA), Scituate district leaders should be purchasing Internet Access that provides sufficient bandwidth for the current school year while positioning the district for the future. According to the report, Scituate minimum bandwidth targets should have at least 100mbps Internet Access for every 1,000 students². With just under 1,500 students, the district should currently have 150 mbps of Internet Access with goal of reaching 1Gbps of Internet Access for every 1,000 students (1.5Gbps) by SY18. Currently Scituate subscribes to a 250 mbps connection which meets the current bandwidth target but falls short of the SY18 goal..

Recommendations: As technology usage increases across the district, Scituate should consider augmenting bandwidth recommendation of 1.5Gbps of Internet Access for the district. However at this point, we see no reason to increase this speed.

Wireless Access

The Scituate School District currently leverages a multi-vendor wired network coupled with a Ruckus wireless system. The wireless network was partially funded by RIDE’s Wireless Classroom Initiative (WCI)³ which installed wireless access in every classroom across the state. Our site visits uncovered areas of the elementary schools leveraging older wireless technology.

Reliable **ubiquitous wireless** access throughout all classrooms **is the second most crucial component** to supporting blended classrooms. In a blended learning environment, students are encouraged to use their devices to access the web for more dynamic content, collaborate with

¹ "The Broadband Imperative - SETDA." http://www.setda.org/setda_broadbandimperative_may20final/. Accessed 3 May. 2017.
² Fox, Christine et al. "The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs." *State Educational Technology Directors Association* (2012).
³ "Wireless Classroom Initiative - School District Financial Data - Funding" <http://www.ride.ri.gov/FundingFinance/SchoolDistrictFinancialData/WirelessClassroomInitiative.aspx>. Accessed 2 May 2017.

other students, stream content, and receive and post assignments. As teachers start to take a more blended and personalized approach in their teaching, they need to rely on more bandwidth to deliver their content/assessments. To meet the demands of the network traffic generated by these activities, the Scituate wireless network should be able to meet the wireless access needs of teachers and students throughout their schools.

Recommendations: None at this time.

Site Visit Follow-up: During our visit in February, it was brought to our attention that the current Wireless System was lacking the proper battery backup solution. This caused outages/delays throughout the network during power failures. This issue has since been resolved by Technology Department. Battery backup devices are installed throughout the school to keep the wireless devices functioning for a period of time during any power failure.

Internal Connections Bandwidth

Much like Internet bandwidth, internal connections bandwidth is another crucial infrastructure component. Internal connection bandwidth lines carry internal traffic to the internet as well as to local resources, such as storage, printing, and any network systems (i.e. SIS, LMS, file). The SETDA Broadband Imperative report suggests that Scituate internal connections meet minimum bandwidth targets with at least 1Gbps bandwidth for every 1,000 current students and 10Gbps for every 1,000 students⁴ by 2017/18 a school year.

Wireless Bandwidth

During our visit we conducted bandwidth testing in the pilot classroom at Scituate High School. For the WiFiPerf TCP test, we utilized several Ruckus wireless access points located in various classrooms on the main floor of the school.

The test centered on the transfer of a 1000MB file (up and down) between a Highlander Institute laptop and another laptop device. The test included several iterations to simulate the actual educational environment. In each iteration, we relocated the devices from their previous testing spots and performed the same 15 second WiFiPerf TCP test to record bandwidth speeds. The throughput results were measured in Mbps which indicated the available bandwidth as it relates to accessing both local (on premises resources) as well as internet access speeds from the wireless devices.

⁴ Fox, Christine et al. "The Broadband Imperative: Recommendations to Address K-12 Education Infrastructure Needs." *State Educational Technology Directors Association* (2012).

Below is a chart of the test results:

Summary:

Test #	SSID	Client	Server	Test Type	Duration	Interval	Average
17	SDHW	10.1.102.3 3	10.1.102.1 6	TCP	15	5	211.24 Mbps
16	SDHW	10.1.102.3 3	10.1.102.1 6	TCP	15	5	466.78 Mbps
15	SDHW	10.1.102.3 3	10.1.102.1 6	TCP	15	5	505.52 Mbps

Intervals:

Test #17 - Simulation of 15 devices transferring data at the same time.

Interval	Transfer Size	Throughput
0-15 s	377.85 MB	211.24 Mbps

Test #16 - Simulation of 10 devices transferring data at the same time.

Interval	Transfer Size	Throughput
0-15 s	835.06 MB	466.78 Mbps

Test #15 - Simulation of 5 devices transferring data at the same time.

Interval	Transfer Size	Throughput
0-15 s	907.84 MB	505.52 Mbps

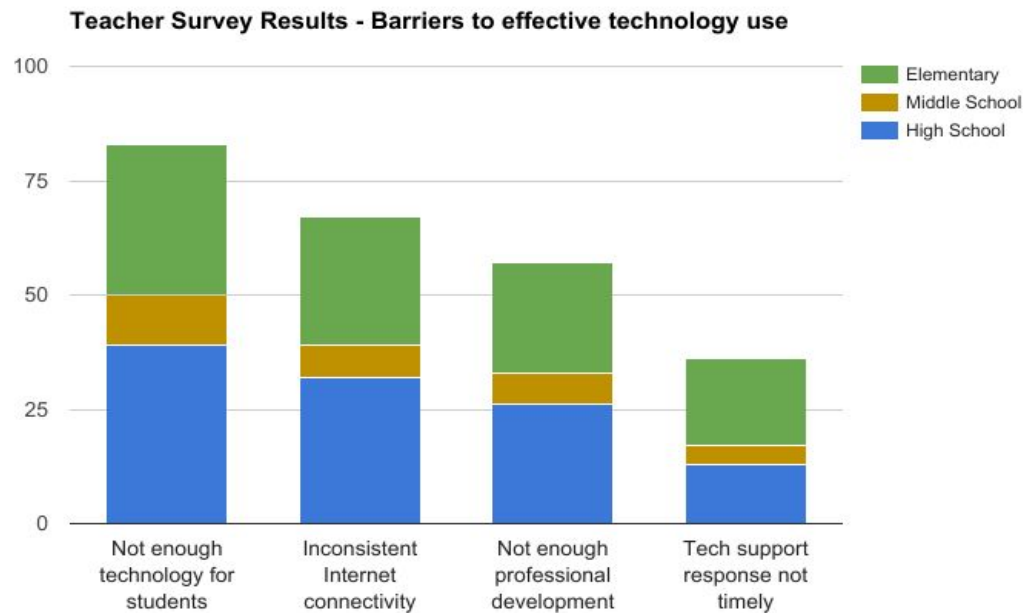
Test #16 - Simulation of 10 devices transferring data at the same time. Here's the bandwidth report from one device.

From the test results to the right,, it appears that most high school classrooms have adequate coverage and necessary bandwidth to support quality blended learning environments. During the test , Highlander Institute staff were able to obtain

speeds from 30 Mbps to 90+ Mbps, which far exceeds the **internal connections** bandwidth minimums outlined by the SETDA report (at least 1 Gbps for 1,000 students).

It is important to note that during this test, only a minimum number of devices were in use and connected to the wireless network. Any change or influx of devices connected could vastly affect these rates. Further study would include using various tools to monitor rates while layering additional devices onto the network to ensure that the quality of service remains the same. For more information, reference the SETDA-commissioned report by ISP Netcraft (below) to see an independent technical analysis⁵ of some of these tools.

Recommendations: None. The internal connection through the wireless system pass all technical tests and meet current/future demands.



Wired Bandwidth

Most of the wired network in Scituate **uses end-of-life/obsolete switching** technology. This switching technology leverages 10/100 Mbps ports rather than the industry standard of 1 Gbps per port. This decreased bandwidth capacity affects all wired desktops. Given that the majority of the devices in the Scituate schools are wired, users are most definitely feeling the impact of the 8+ year old switching technology as seen in the survey responses below. Teachers are in agreement (see below) that “Inconsistent Internet Connectivity” is the second biggest barrier to technology use.

⁵ "Netcraft Analysis: Online Speed Testing Tools - SETDA." 11 April. 2015
<http://www.setda.org/?attachment_id=224>

Wireless devices in Scituate can access faster speeds than their desktop counterparts, which isn't usually the case. Frequently, wired devices have some of the fastest speeds on a network because these devices are subject to less interference. Given current and future directions in wireless technology, the Jacobs Facility Condition Assessment Report⁶ is cautious about recommending upgrades to cables and switches for wired networks.

*Recommendations: We are in alignment with the Jacobs Report in that we recommend **maintaining a strong wireless network** that requires fewer switching devices and less physical cabling in schools. However, if the district is supporting newer desktop devices (4 years or younger) we recommend upgrading switch ports to 1GB+ to relieve some of the frustrations currently faced by users. We also recommend reducing the number of devices that share one connection (such as nComputing devices).*

⁶ "Facility Condition Assessment - Scituate School Department." 6 Oct. 2016, http://scituateri.net/Scituate_LEA%20Review%20Doc%2010%202016%20V2.pdf. Accessed 3 May 2017.

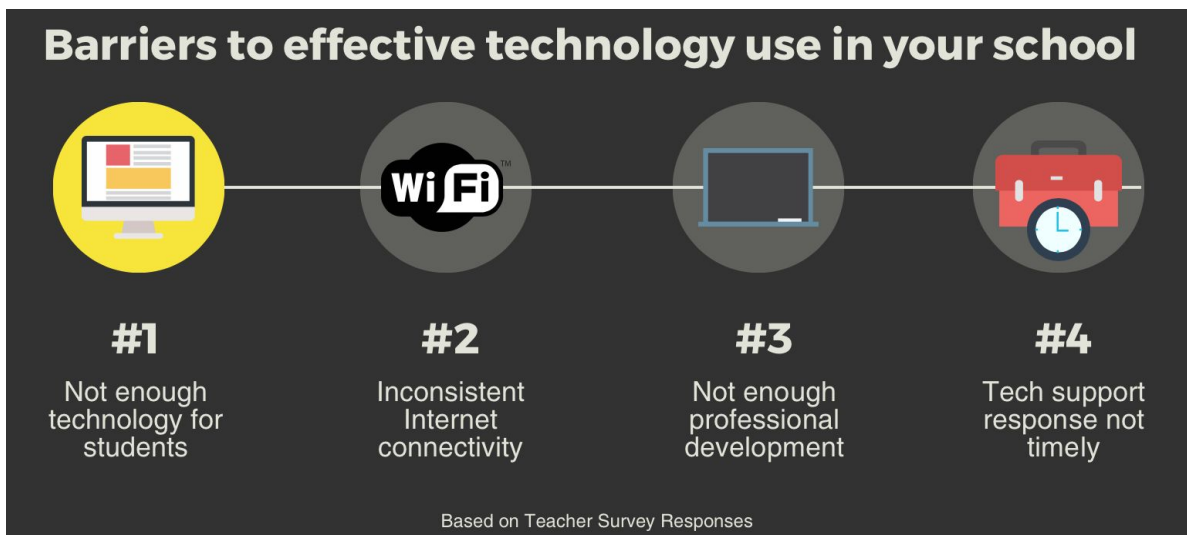
Competency #2

Offer adequate accessibility to devices

The Scituate School District currently leverages a variety of end user Windows devices. Models include laptops, thin-client, desktops, and tablets. All district users (excluding iPad users) have access to software and documents stored on local machines and/or a server. As stated earlier, there are more stationary devices than wireless devices in the district. Consequently, most classroom configurations are designed around the locations of wired connectivity and power.

Wired Devices

According to teacher survey results, the number one barrier to effective technology use was “Not enough technology for students”.



However, the number of “stations” that are available across the district give Scituate a favorable device to student ratio (<3:1 and or 700+ devices district-wide). Despite the strong numbers, teachers and students across the district tend to find nComputing devices (roughly 60-70% of all the districts devices) unreliable and undependable. nComputing allows multiple “stations” to share the resource of one device (see below), contributing to a less than optimum experience for the end user.

How NComputing works



NComputing allows the tech team to support a limited number of devices that in turn support hundreds of “stations”. While this offers a speedy configuration and deployment solution for the technology staff, it comes with inherent limitations.

Observable obstacles include the following:

- Stations freeze or lock-up when multiple users attempt to land on the same website at the same time
- When multiple users log-in simultaneously, wait times can become lengthy
- The server shares wired bandwidth for one device with all of the nodes at the station, diluting access and speed.
- Audio/video is choppy and buffered more than usual
- User sessions disconnect randomly in the middle of a work session

Most of these issues result in users leveraging workarounds and/or falling back to “Plan B”. While nComputing devices offer low-cost access to basic resources (internally and externally), limitations on access to more interactive and sophisticated web-based tools and resources have put this solution in jeopardy. A majority of teachers and students do not trust these devices and must constantly develop contingency plans when the computers malfunction or become too slow.

Recommendation: We recommend discontinuing the use of the current nComputing deployment starting at the high school in favor of more reliable mobile technology devices.

Wireless Devices

As stated earlier, the educational market has been adopting mobile technology at a rapid rate⁷. Mobile devices allow student to be more creative and collaborative while giving the teacher more flexible learning environments. It appears that Scituate schools has started taking the same approach.



Source: [Mobile Learning Stats that Will Make You Rethink Your Training Strategy](#)

In the elementary schools the current adoption of iPads (or tablet devices) is a great solution for students. There are plenty of creative and interactive applications that foster strong digital literacy skills at a young age. Deployment of mobile devices can be challenging. During our visits we uncovered a few issues with the newer mobile devices that run on a Windows-based platform:

- **Lengthy log-in to mobile devices.** Windows network design requires an automatically generated local cached copy of a student's desktop on an individual device. While efficient when students use the same device each day, Scituate students do not always return to the same devices, requiring a new profile to be built before each log-in.
- **Various software updates.** Items such as Antivirus, Adobe Flash, Java, and Windows Updates sometimes require a reboot and installation time during periodic updates.

⁷ "Mobile Learning Stats that Will Make You Rethink Your Training Strategy." 1 Dec. 2016, <http://info.shiftelearning.com/blog/bid/331987/mobile-learning-stats-that-will-make-you-rethink-your-training-strategy>. Accessed 3 May 2017.

- **Reimaging.** Due to some configuration/system issues and corruption of the Windows Operating System, mobile devices sometimes need to be refreshed which essentially wipes all them back to the original Scituate configure state. This has caused frustration for some students and teachers when their data has been subsequently deleted.

Recommendations: Continue to purchase mobile devices for student/teacher use across the district. A equitable distribution model should be carefully reviewed and evaluated. An example of a successful district deployment model follows:

PK-2	3-5	6-8	9-12
6-8 iPads per classroom	1 cart of 30 devices shared amongst 3 classrooms	1 cart of 30 devices for each team	1 cart of 30 devices for each content area

Like all deployment models there are some inherent pros and cons to this recommendation. In the model above, teachers have the ability to grow into technology at slower, more equitable pace. However, scheduling devices is sometime challenging - as well as keeping devices well-maintained and charged for use across multiple classrooms.

We also recommend evaluating the continuation of a Windows-based device across the district. Migrating to a Google Chromebook solution would require substantially less overhead to manage/deploy/configure, annual software expenses (antivirus, desktop publishing, etc) and decrease the issues that users are experiencing with the Windows platform.

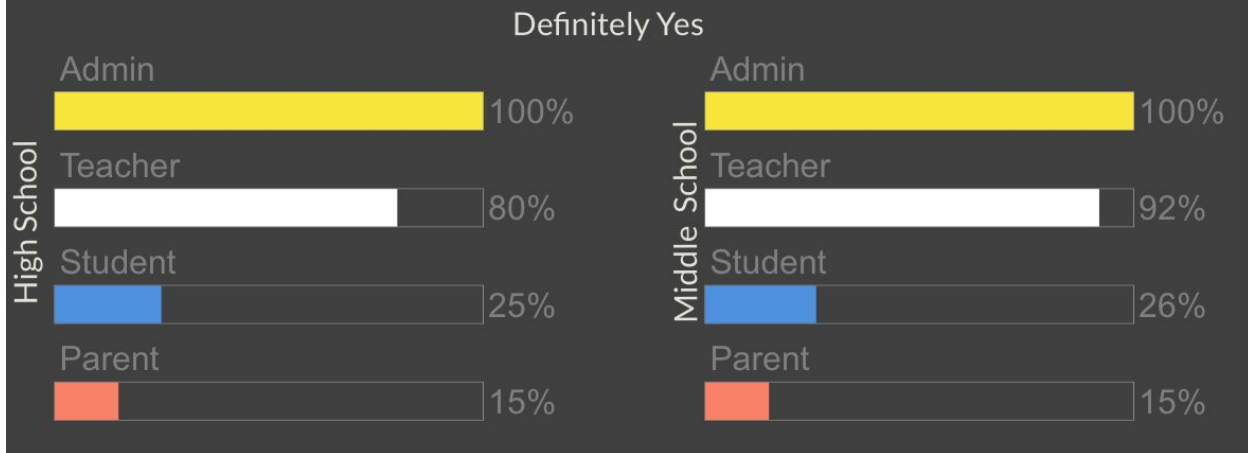
BYOD



Over the past couple of years, Scituate schools have been increasing the number of devices for students across the district through the use of the BYOD program. However, our survey data shows that there is some miscommunication about the BYOD program and the ability to fully leverage this solution in the classroom.

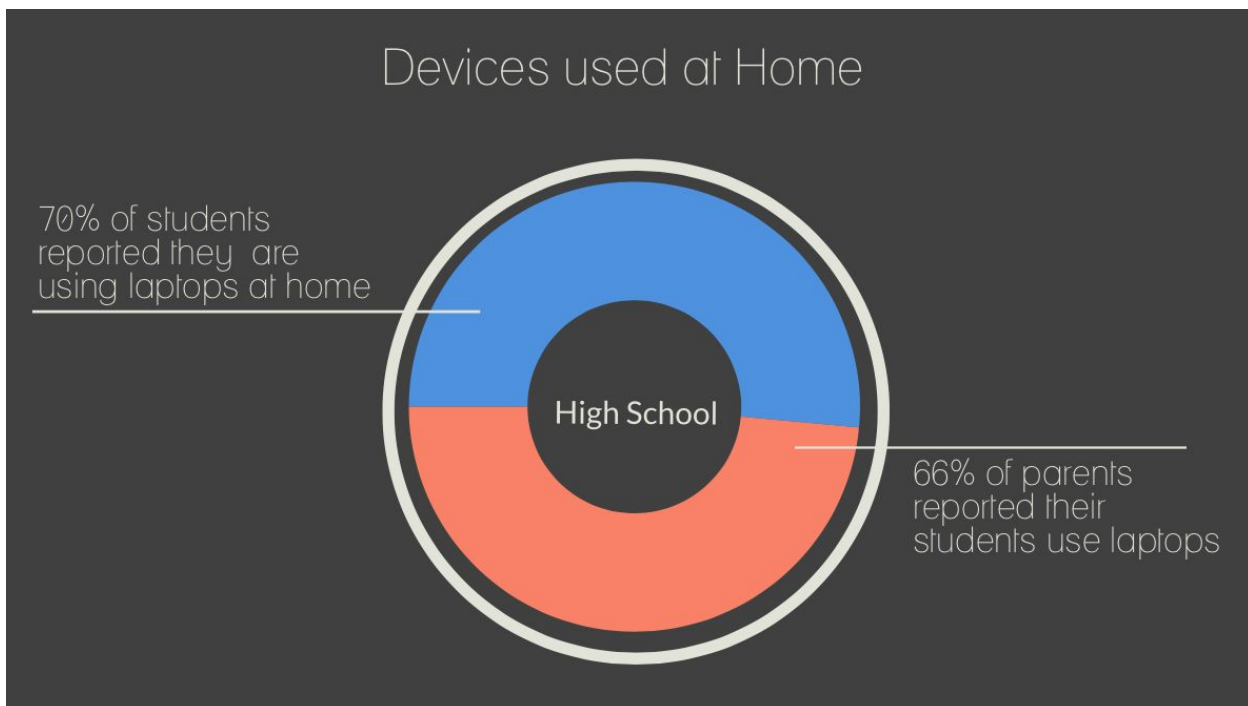
SURVEY RESULTS

Does your school have a Bring Your Own Device (BYOD) program that allows students to use their own devices in the classroom?



* 35% of high school students and parents said “Might or might not”

** 53% of middle school parents said “Probably or Definitely Not” and 28% of students said “Definitely Not”



* Both students and parents listed desktops as second most used tech at home

* Middle School parents listed cell phones (74%), laptops (67%) and iPad (62%) as tech most used at home for learning. Students listed laptop (61%) and iPad (40%) as tech most used at home.

Priya Viswanathan from lifewire.com⁸ makes some excellent points about rolling out a BYOD program:

Pro's:

- **Cost Control:** *Students' usage of their own mobile devices reduces all-round costs for the school. The management no longer needs to invest on distributing books, paper and other material to its students. Students take care of and maintain their own gadgets – that takes the responsibility of the concerned institution.*
- **Concentrated Funding:** *Schools can use the extra funds thus saved, to finance students in need. They can also offer better and more recent technology with the funds in hand.*
- **Full Control:** *Students have complete control of all the software and other material they wish to download, without limitations.*
- **Unlimited Information:** *Internet access on students' tablets enables them to browse the Web, perform research, collect material and glean all the information available on the subject of their choice; while on the move.*
- **Increased Productivity:** *Training students to use mobile devices responsibly, within the classroom environment, teaches them to use the latest technology in the most effective and productive method.*
- **Latest Technology:** *The younger generation usually tends to be up-to-date with the latest technology. Hence, permitting them to bring their smartphones and tablets to school takes the responsibility off the institution to provide cutting-edge technology at all times.*

Con's

- **Funding Concerns:** *Schools, especially the smaller ones, will have to think of funding for underprivileged students. They will also have to make provisions in case of damaged, misplaced or lost devices. Some households share devices among them. In such a case, schools have to chalk out policies for device use, assign data access to only authorized users, decide on payment in case of damage and so on.*
- **Training Teachers:** *Educational establishments will have to invest on training teachers to effectively use the latest mobile technology within the classroom.*
- **Privacy Issues:** *Privacy is one of the biggest issues surrounding BYOD in education. Schools will have to constantly supervise the material that is being accessed and shared, especially among younger students.*

⁸ "How Bring Your Own Device Impacts the Classroom - Lifewire." 11 Sep. 2016, <https://www.lifewire.com/bring-your-own-device-impact-on-education-2373101>. Accessed 3 May 2017.

- **Control Struggles:** Instances of online cheating can potentially increase with students getting unlimited access to chat and sharing software. The IT staff will have to keep an eye on the data being transmitted and copied, at all times.
- **Mobile Access:** Educational institutions will have to draw out a clear plan on the types of mobile devices that can be permitted inside the school; number of Wi-Fi access points around the establishment and bandwidth; central data storage; mobile malware detection service; data protection; law enforcement policies and so on and so forth.
- **Societal Divide:** Students' use of smartphones and tablets as a style statement would further create a divide between the haves and have-nots in school.
- **Disruption:** Students may end up using their devices for chatting, logging onto social networks; thereby neglecting their academic duties.

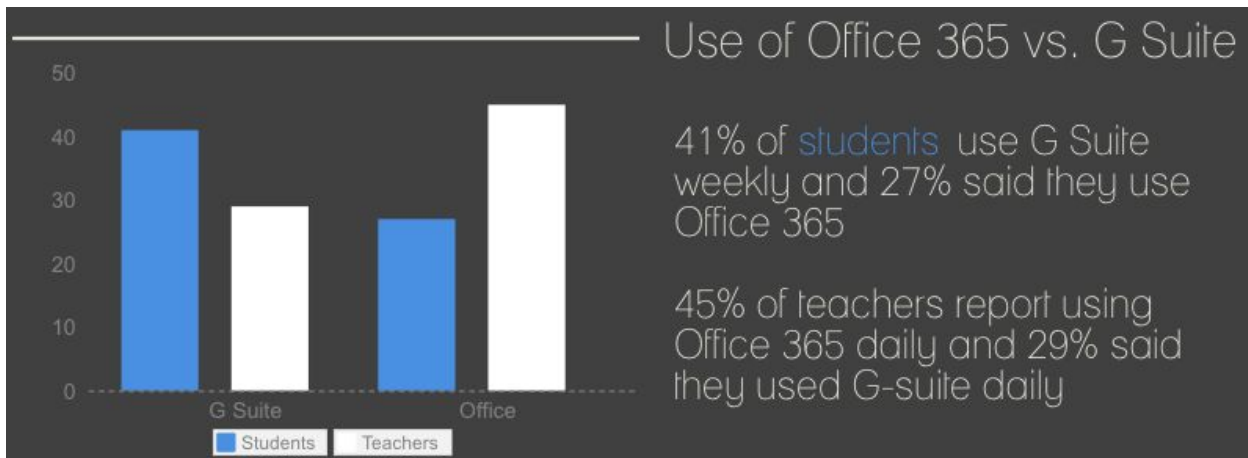
Recommendation: Given the current technology device conditions at the middle and high school and the desire to increase the number of device for students, BYOD in Scituate should be re-evaluated as a potential temporary to long-term solution for supplemental student devices. Keep in mind, "serious concerns arise if schools use BYOD as their primary method for ensuring students have devices" according to USDOE's Office of Educational Technology National Education Technology Plan⁹. We observed students utilizing their own devices in class but feedback wasn't very favorable since they didn't have access to same local resources (such as file and print) as districts devices.

Cloud-Based Platform

From our research and observations it appears that there is some disconnect between the current supported Windows platform and end users at the middle and high school. During our high school visits, we observed students who hacked together their own google community to collaborate and communicate through the cloud. Some students stated that they wanted to "get past the USB thumb drive method of transporting documents". What started as simple use of the Google Drive has turned into a student/teacher-led community of collaboration. When teachers were asked why they were not leverage the provisioned Office365 accounts, the response was G Suite is less cumbersome to collaborate, comment, and share.

We are aware that the district technology team is supporting an Office365 (Microsoft Office in the Cloud) rollout for teachers this year and students next school year. We have found a significant need for one unified cloud platform that teachers and students can use to collaborate and communicate effectively supported by all throughout the district .

⁹ "Section 5: Infrastructure - Office of Educational Technology - US"
<https://tech.ed.gov/netp/infrastructure/>. Accessed 1 Jun. 2017.



High School Students Survey Submission

Recommendations: Before selecting any cloud-based platform we suggest a thorough analysis of the available platforms by all community members (administrators, teachers, students, and technology personnel). We suggest site visits to other districts leveraging Office365 and/or G Suite¹⁰. This will allow the team to take a deeper dive around the various platforms before moving forward.

Competency #3

Enable responsive & effective tech support

Staffing

The Scituate School District has a unique staffing model where all technology support is outsourced to a privately held company. The model has the following support personnel for the district:

- Technology Leader (Billed at .5 FTE)
- MS/HS Network/Systems Person (Billed at 1.0 FTE)
- Technicians (Billed at .2 FTE x 2)

From this information we were able to gather that:

- The responsibilities of the Tech Coordinator and his staff **require more time** than the company is willing to support through billing. After reviewing the current Tech Coordinator's responsibilities, we found that it is extremely difficult to keep up with the

¹⁰ "G Suite - Google for Education." <https://edu.google.com/products/productivity-tools/>. Accessed 3 May 2017.

ongoing maintenance of district technology while also trying to deploy and implement new technology initiatives.

- Demands for technology have been increasing in every school district across the country. However, the human capital support for these demands has rarely seen a comparable increase, if at all. The conditions in the Scituate School District mirror this national trend.

Tech Coordinator is also responsible for all data reporting and the configuration of any related data-system. Districts similar in size have a .5 to 1.0 FTE dedicated to just managing district data requirements.

- The Tech Coordinator has the understanding and knowledge to support district data systems. In fact, in our discovery conversations it came up several times how the coordinator had “coded” new enhancements in the Student Information System (SIS). Typically districts pay for any enhancements/custom reporting to their SIS. In Scituate, **it is a benefit to have someone with the skills and expertise to make these necessary changes** without any additional financial expense to the district.

Recommendations: The current outsourced staffing model has some inherent cost savings benefits and challenges for the district. While there’s no other comparable model, we can confidently say that the district is saving money by not having to offer any contracted benefits (healthcare, pension, etc.) to any of its technology staff. Instead the district has built a model of support with a local company to staff and manage all day-to-day technology issues for the past 20 years. With all of the day-to-day responsibilities that continue to mount for the technology staff, you essentially have two individuals who strive to get their services renewed by putting in the extra time without billing for any extra “contracted services”.

This model is creating an unrealistic idea of a true costs for technology support for the school department. If the current support personnel’s contract were not renewed (by either party), we are unsure you could replace all of the support functions for the amount you are spending.

Work Order System

The technology department **does not currently use a district-wide technology work order system**. From our findings, it appears that there are different support systems for each school. For instance, one school maintains a list of work orders in the main office while another school sends an email directly to the district technology team. The lack of a unified work order system is resulting in some issues:

- Equity. It was noted several times that some end users felt other schools or classrooms got preference. While this may or may not be true, one coherent system could alleviate this concern.

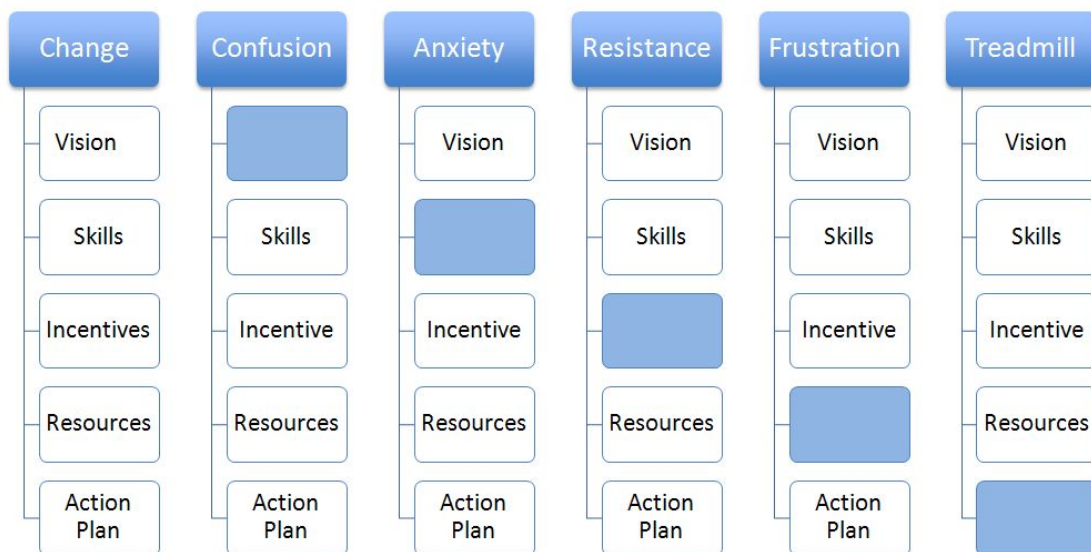
- Communication. Teachers and tech support personnel struggle to efficiently communicate key information, i.e., “Has the work been completed?”, “When was the problem reported?”, “When is my repair scheduled to be fixed?”
- Generalizations. Inefficiency results in generalizations about the failure of certain district hardware, i.e., “These devices always need to be repaired!”
- Accountability. Ideally, building/district leaders should be able to manage and evaluate service response times and any other problematic areas by analyzing clear metrics..

Recommendations: Explore options for a work order/help desk system for all users to leverage across the district. At a minimum the ticketing system should outline the details of the problem and repair notes. Ideally the system would allow end users to track their request, understand where they are in the queue and be notified when their problem was solved. Data from this system can help quantify the number of issues and tech resolutions across the district over a given time, pointing out high versus low maintenance equipment and devices..

Competency #4

Understand district readiness

What does it mean to be ready? To implement any lasting change, there must be a clear vision, a long-term plan with regular benchmarks for assessment and reflection, resources and professional development to build necessary skills, and the culture and buy-in to push the change forward. In our walkthroughs, we found many of these critical elements to be absent or ill-defined.



Source: *The Managing Complex Change Model by Dr. Mary Lippitt*

Our current understanding of the district needs are as follows:

- As stated previously, there is no unified vision for technology integration. Different district leaders can articulate a personal goal or need, but there is no clearly stated, universally understood, district-wide statement of intent.
- As a result, there is no actionable plan to support and scale the growth of technology integration. Current solutions are reactive, rather than proactive (i.e. add more devices rather than manage and update the current volume, maintain a cumbersome Windows platform rather than seek relatively hands-free solutions).
- Even with a clear vision and long-term plan, the funding structure is fractured. Budgets are managed within individual departments, limiting the flexibility for large-scale planning and growth.
- There is little evidence of a plan to support or sustain teacher skills. Without regular support or guidance, the presence of technology will not have the impact desired or infuse Scituate classrooms with 21st century teaching practices. Teachers, like students, fall on a continuum of expertise and must be supported by differentiated professional development and embedded classroom supports. Successful implementation of Blended Learning requires a well-planned infrastructure for teacher support .

While there are some needs that must be met before this work is successful, Scituate has some promising entry points through motivated teachers. Despite daily challenges and frustrations, there are teachers that are innovative and resilient in their blended learning practices. They are thirsty for more resources, ready to try new tools and techniques, and prepared to be leaders in supporting district-wide change.

A suggested course of action to improve readiness would include:

- Gather information, visit exemplary classrooms and shadow Scituate students to understand the shift that technology can support
- **Establish a shared vision** of how technology will improve teaching and learning in Scituate.
- Articulate priority actions and practices that should take place in classrooms. Clarify how the student experience is expected to change.
- Identify early adopters. Enlist these teachers to test the vision and priorities and push practices by establishing pilot classrooms
- Review pilots and revise vision and priorities based on results. Codify an action plan for replication and scale
- Revise policies, align curriculum & software and develop blended & personalized professional development approaches to support implementation.

This approach has been developed and tested by the Highlander Institute as part of our Fuse RI project.



Conclusion/Next Steps

This report was designed to give the Scituate school community an external perspective on current successes and focus areas for improvement across their technology initiative. The three main takeaways that became clear through this audit project are as follows:

1. The significant negative feedback we heard from students and teachers around internet connectivity is not a function of broadband or access. Rather it is due to the nComputing configurations that connect multiple devices, slowing internet speeds and paralyzing machines when the computers are used simultaneously at capacity. While efficient in terms of management, nComputing have been unreliable enough to prevent teachers from building tech-integrated lessons and activities. One hundred percent of the high school teachers we spoke to reported that they plan around the glitches if they plan to use the nComputing devices. If Scituate Schools are committed to blended learning, nComputing need to be phased out in the near future and replaced with mobile hardware solutions.
2. In order for teachers to have confidence in the infrastructure Scituate Schools is providing for them, they require a reliable platform in addition to reliable computers. The wait times, log jams and resets inherent in the Windows platform has been a deal-breaker for many educators who are not willing to sacrifice instructional time for unpredictably long delays when students log-on to Windows. Both teachers and students have accessed the free Google platform as a work-around, which has resulted in a fragmented and inconsistent implementation across classrooms, grade levels and schools. The leadership team needs

to better understand the frustrations associated with the Windows platform and actively engage teachers and students in a process for rethinking the future of this software.

3. Finally, the biggest obstacle facing integrated technology initiatives in Scituate Schools is a lack of clarity and vision around why the district is moving in this direction. The leadership team needs to visit classrooms, shadow students and enlist the help of early adopter teachers to build a vision and rationale for blended learning in Scituate. Educational priorities and the ideal student experience need to drive technology use.

In conclusion, we end with a message that we received from one of your graduating students this year. Let this statement be the driving force behind the next stages of your work:

When I look at my peers in different towns and see the kind of learning they experienced in higher tech environments, I feel as though I have been denied an education that will fully prepare me for my future.

- Member of the Class of 2017



Appendix A - Other findings and takeaways from the district survey

Middle School Findings

- 1. **Takeaway for digital access available to parents and guardians at home**
 - a. Teachers and parents agree that most information is gleaned from the school's website (85%/87%) or through a grade portal (100%/95%)
- 2. **Takeaway around the level of emphasis placed on 21st Century Skills as elements embedded into your school's' mission.**
 - a. Teachers and parents have similarly strong emphasis around each element, except for Collaboration and Digital Citizenship.

Skill	Teacher	Parent
Critical thinking and problem solving	81.82%	82.42%
Communication	81.82%	81.32%
Collaboration	90.91%	66.67%
Digital Citizenship	36.36%	62.79%
Self-Direction	63.64%	76.92%
Creativity and Innovation	63.64%	78.89%

- 3. **Use of Office 365 vs. G Suite**
 - a. 29% of students said they used Office 365 weekly, whereas 22% said G Suite.
 - b. 66% of teachers said they never use G Suite and 58% said they never use Office

Comparative Elementary Findings By Teacher Responses

- 1. **Barriers to technology**
 - a. At Clayville Elementary the top two are not enough tech for students (90%) and inconsistent internet connectivity (80%)
 - b. At North Scituate there was equal responses for lack of pd, no timely support and not enough tech (64%). Slightly more for inconsistent internet access (71%)

- c. At Hope Elementary 100% said not enough tech for students, 80% reported not enough PD, and 73% listed internet connectivity as an issue.

2. Internet Connected Devices

- a. 36% of teachers at Clayville say they have enough devices at school when they are needed for learning
- b. 46% of teachers at North Scituate say they have enough devices at school when they are needed for learning
- c. 40% of teachers at Hope say they have enough devices at school when they are needed for learning

3. Use of Tech

- a. Teachers at all schools are using Microsoft 365 more often than G Suite by a response rate twice as high for daily use. The range is 53%-7%.
- b. Teachers at all schools are primarily using desktops, laptops and projectors for tech in the classroom.